

State of California  
California Environmental Protection Agency

**AIR RESOURCES BOARD**

STAFF REPORT

**COST ANALYSIS FOR IN-STATION DIAGNOSTICS (ISD)  
AT GASOLINE DISPENSING FACILITIES**

APRIL 2007

Prepared by Monitoring and Laboratory Division

This report has been reviewed by the staff of the California Air Resources Board. Publication does not signify that the contents necessarily reflect the views and policies of the Air Resources Board.

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## EXECUTIVE SUMMARY

The Enhanced Vapor Recovery Program requires gasoline dispensing facilities (GDFs) to upgrade equipment to meet several technology-forcing standards. One new requirement is in-station diagnostics (ISD), which monitors the performance of the vapor recovery system and shuts down gasoline dispensing if specific system failures that lead to excess emissions are not corrected. In response to stakeholder concerns that staff had underestimated the future costs of ISD, the Air Resources Board in December 2002 directed staff to follow-up on ISD costs in Resolution 02-35 as follows:

*BE IT FURTHER RESOLVED that the Board directs the Executive Officer and Board staff to assess, following the initial certification of the first EVR Phase II system with in-station diagnostics (ISD), the capital cost impacts of ISD on smaller through-put GDFs. The Executive Officer and Board staff are directed to complete the assessment within 18 months after the initial certification of an ISD equipped system.*

The first ISD system was certified on August 31, 2005. Since that time, approximately 100 ISD systems have been installed in California. As discussed in this report, staff has worked with air districts, gasoline marketers and equipment manufacturers to collect data on real world costs, with valid cost data obtained from five ISD installations.

This report fulfills the Board directive in Resolution 02-35 and demonstrates that real-world ISD capital cost impacts to the smaller gasoline throughput station owners are near or below 2002 ISD cost estimates by ARB staff. Staff recommends maintaining the current ISD requirements.

## **I. OVERVIEW**

### **A. Introduction**

In March of 2000, the Air Resources Board (ARB or Board) approved the Enhanced Vapor Recovery (EVR) regulation amendments. The regulations establish new standards for vapor recovery systems to reduce emissions during storage and transfer of gasoline at gasoline dispensing facilities (GDFs or service stations).

Because several of the EVR standards were viewed to be technology-forcing, the Board directed staff to conduct a technology review for standards with future effective dates. In December 2002, staff returned to the Board with a comprehensive EVR technology review, which demonstrated that, with a slight amendment to the “dripless nozzle” standard, all of the EVR standards were technically feasible. Concerns remained, however, that the cost for one EVR requirement, an in-station diagnostics (ISD) system to monitor EVR vapor recovery systems, would cost more than staff estimated. Based on manufacturer information, staff estimated that ISD systems would cost approximately \$10,000 to \$17,000 (2001 dollars) per station. Gasoline marketers claimed that ISD would be too expensive for smaller GDFs and that ISD costs to station operators could not be accurately estimated until an EVR Phase II system with ISD was certified. As ISD systems were still under development, the Board directed staff in Resolution 02-35 to assess the capital cost impacts of ISD on smaller-throughput GDFs within 18 months after the certification of the first ISD system. A copy of Resolution 02-35 is provided in Appendix 1.

This report provides the ISD cost assessment as directed by the Board in 2002. Staff has worked with air districts, gasoline marketers and equipment manufacturers to collect data on real world costs, with valid cost data obtained from five ISD installations. The cost data collected on installed ISD systems at smaller throughput sites show that the capital cost impacts of ISD on station owners are, on average, 5% lower than staff estimated in 2002.

### **B. Vapor Recovery at Service Stations**

Gasoline vapor emissions are controlled during two types of gasoline transfer. Phase I vapor recovery collects vapors when a tanker truck fills the service station underground tank. Phase II vapor recovery collects vapors during vehicle refueling. The vapor recovery collection efficiency during both of these transfers is determined through certification of vapor recovery systems.

The Air Resources Board and districts have shared implementation of the vapor recovery program since the 1970s. ARB staff certifies prototype Phase I and Phase II vapor recovery systems installed at operating station test sites. District rules and state law require that only ARB-certified systems be installed. District

staff permits gasoline stations and requires the vapor recovery system to be tested upon installation. District staff also conducts regular inspections to check that these systems are operating as certified.

The EVR amendments to the vapor recovery program have provided additional emission reductions from petroleum marketing operations, one of the largest stationary source categories of reactive organic gases (ROG) emissions. EVR helps to meet our State Implementation Plan (SIP) commitments and fulfill the obligations of the SIP settlement. The EVR program is expected to achieve over 25 tons/day of VOC emission reductions statewide. The EVR improvements to ARB's certification process have increased the in-use reliability of vapor recovery systems at service stations. EVR is thus appreciated by both air pollution control districts and gasoline marketers who purchase vapor recovery equipment.

The vapor recovery requirements affect a multitude of stakeholders. These include the vapor recovery equipment manufacturers, gasoline marketers who purchase this equipment, contractors who install and maintain vapor recovery systems and air pollution control districts who enforce vapor recovery rules. In addition, California certified systems are required by most other states and many countries.

The EVR requirements are being phased in from 2001 to 2010. All stations (except those in ozone attainment areas) were required to upgrade to EVR Phase I systems by April 2005. March 2006 was the deadline to ensure that existing Phase II systems were compatible with vehicles equipped with onboard-refueling vapor recovery (ORVR). The final phase of EVR requires that stations upgrade to EVR Phase II systems by April 2009 and install ISD by September 2009. Lower-throughput stations have until September 2010 to install ISD.

### **C. In-Station Diagnostics**

In-station diagnostics (ISD) provide continuous real-time monitoring of critical emission-related vapor recovery system parameters and components, and alert the station operator when a failure mode is detected so that corrective action can be taken. In-use vapor recovery systems which do not operate as certified can result in significant excess emissions. Furthermore, as vapor recovery system defects do not normally affect vehicle fueling, emissions continue until the next field test or inspection, which may not occur for many months. The statewide emissions reductions associated with full ISD implementation are estimated as eight tons/day of reactive organic gases (ROG) in 2010.

ISD systems consist of sensors to measure gasoline vapor flow and gasoline storage tank vapor pressure, and a computer processor to analyze the data to determine if the vapor recovery system is operating within acceptable ranges. If the ISD data shows vapor recovery system performance degradation, a warning alarm is provided to the station operator. If no action is taken to address the

problem within a certain time period, the ISD system will signal a failure alarm and shut down gasoline dispensing at the facility.

One ISD system is currently certified, and a second system is in certification testing. The Veeder-Root ISD system was certified on August 31, 2005, as part of the Franklin Fueling/Healy EVR Phase II system per Executive Order VR-202-A. As of December 2006, staff estimates that approximately 100 ISD systems have been installed statewide, and many others have received permits to construct (see Appendix 2).

The ISD system can be added to the Veeder-Root TLS-350 monitor, which is already used in about 80% of service stations in California to meet the requirements of the State Water Resources Control Board's underground storage tank program requirements.

## **II. OUTREACH**

ARB staff worked closely with air district staff, petroleum marketers associations and other stakeholders in collecting data for the cost analysis.

### **A. Stakeholder Outreach**

#### **1. CAPCOA Vapor Recovery Committee**

The California Air Pollution Control Officers Association (CAPCOA) has a standing committee that meets quarterly to address vapor recovery issues. The draft plan for assessing ISD cost impacts was first shared with the CAPCOA Vapor Recovery Committee on October 20, 2005. Comments from this committee have been helpful in improving the outreach materials to station owners. ARB staff has presented updates on the progress of the cost analysis at each subsequent quarterly meeting of this committee.

#### **2. Petroleum Marketers Associations**

Staff requested and received input on the cost analysis plan and cost survey from the California Independent Oil Marketers Association (CIOMA) and Western States Petroleum Association (WSPA). The input from these groups improved the cost survey significantly.

#### **3. Public Meetings and Webpage Postings**

The draft cost analysis plan was posted on the web for public comment in December 2005 with comments requested by the end of January 2006. An ISD Informational Public Meeting was held on February 16, 2006, which included discussion of the proposed cost analysis plan. The final cost analysis plan was posted on the web in March 2006 (see Appendix 3). The cost survey was also

made available on the webpage on June 28, 2006. Preliminary results of the cost survey results were provided at an ISD Informational Public Meeting held on November 14, 2006.

**B. Cost Survey**

Staff developed a database of stations with ISD from information provided by air pollution control districts and Veeder-Root. On June 26, 2006, the ISD cost survey was mailed to 55 facilities with either ISD installed or permits pending for ISD installation. A second mailing took place on September 6, 2006, to an additional 49 ISD sites. Out of this total of 104 surveys mailed, only six were returned. Five of the six returned cost surveys contained sufficient information to be used in the cost analysis.

**III. ISD COST ANALYSIS**

**A. Methodology**

This section provides the rationale for the 2002 ISD cost estimates, and, using the same approach, updates the staff ISD cost estimates based on 2006 data. The next section calculates 2006 ISD costs based on the survey results, and compares the 2006 real world costs to the 2002 ISD estimates.

Staff recognizes that EVR program costs, emissions, and resulting cost-effectiveness for service stations can vary depending on the gasoline throughput and number of dispensers. Cost-effectiveness was calculated separately for five model gasoline dispensing facility (GDF) categories, based on gasoline throughput as shown in Table III-1.

**Table III-1  
Emission Reductions and Cost-Effectiveness Calculations  
for In-Station Diagnostics (ISD) for Five GDF Model Categories – 2002  
Estimates**

	<b>GDF 1</b>	<b>GDF 2</b>	<b>GDF 3</b>	<b>GDF 4</b>	<b>GDF 5</b>
Throughput Range (gal/yr)	0 – 300,000	300,001- 600,000	600,001 – 1.2 million	1.2 million - 2.4 million	2.4 million and up
% stations	4.7	14.1	45.7	31.3	4.2
% throughput	0.6	5.3	34.3	47.1	12.7
Number of dispensers	1	1.5	3	4.5	6
Emission Reductions (tons/day)	0	0	2.92	4.00	1.08
ISD Annual costs/ Annual emission reductions (\$/lb)	(no ISD)	(no ISD)	\$7.04	\$4.11	\$2.29

In the 2002 staff report for EVR amendments, staff proposed to exempt GDF1 stations from ISD based on cost-effectiveness criteria. This ISD exemption was extended to GDF2 after stakeholders at the December 2002 Board hearing, including air pollution control districts, expressed concern about possible ISD costs to GDF2 facilities, based on their potentially rural location and limited emission benefit. The combination of exempting both GDF1 and GDF2 makes about 20% of California's service stations eligible for the exemption, and represents about a 6% loss, or 0.5 tpd, in the total possible ISD emission reductions.

The following sections provide details on the cost inputs for the 2002 cost analysis, and updated inputs based on 2006 information.

Fixed ISD costs consist of equipment costs and installation costs. The cost of individual ISD components as estimated in 2002 is compared to 2006 actual list price in Table III-2.

**Table III-2  
Comparison of ISD Equipment Cost Estimate in 2002 to  
2006 Actual Manufacturer List Prices**

ISD Component	EVR Tech Rev Price Estimates October 2002	Manufacturer List Prices February 2006
Pressure sensor	\$595	\$900
A/L sensor	\$885	\$900
Datalogger & CPU	\$4,665	\$6,705*
Inventory sensor	\$1,095	\$1,145

\* Assumes customer does not have a TLS-350 and that a TLS is not required for Water Board regulation compliance.

Note that the datalogger and central processing unit (CPU) cost are for a new TLS-350 monitor. As mentioned before, staff estimates that approximately 80% of existing stations already have a TLS-350 monitor which can be upgraded to include ISD for about \$5,000. When these adjustments are made, the total ISD equipment costs for each service station model can be calculated. Staff assumes 2.5 inventory sensors per station (half with 3 USTs and half with 2 USTs). These costs are compared to the 2002 staff report cost estimates in the table below.

**Table III-3  
ISD Equipment Costs per Model GDF**

		<b>GDF 1</b>	<b>GDF 2</b>	<b>GDF 3</b>	<b>GDF 4</b>	<b>GDF 5</b>
EVR Tech Rev October 2002		\$8,883	\$9,625	\$10,656	\$11,980	\$13,308
2006 Manufacturer List Price	New TLS-350	\$11,368	\$11,818	\$13,168	\$14,518	\$15,868
	Retrofit	\$9,693	\$10,143	\$11,493	\$12,843	\$14,103

ISD installation costs (assuming \$55/hr labor) vary depending on the number of dispensers at the station, and whether the installation is at a new or existing station, as indicated in Table III-4:

**Table III-4  
ISD Installation Cost Inputs - 2002**

	Base Cost	Additional cost per Dispenser
New	\$250	\$125
Retrofit	\$300	\$200

For purposes of this cost analysis, we will use the 2002 "worst-case" retrofit costs. The preliminary 2006 ISD installation cost ranges are based on a contractor estimate of 4.7 hrs per dispenser, and labor costs ranging from \$72 to \$135 per hour. The resulting ISD installation cost estimates for each model GDF are given in Table III-5.

**Table III-5  
2002 and 2006 ISD Installation Cost Estimates**

	<b>GDF 1</b>	<b>GDF 2</b>	<b>GDF 3</b>	<b>GDF 4</b>	<b>GDF 5</b>
Number of Dispensers	1	1.5	3	4.5	6
2002	\$500	\$600	\$900	\$1,200	\$1,500
2006	\$340 - \$630	\$510 - \$950	\$1,020 - \$1,900	\$1,520 - \$2,860	\$2,030 - \$3,810

The combined equipment and installation cost estimates for 2002 and 2006 are compared in Table III-6 below. The ISD cost estimates in 2002 were originally published in terms of 2001 dollars. These costs can be adjusted to 2006 equivalent values by multiplying by 1.14. This is the ratio of the 2006 Consumer Price Index (CPI) to the 2001 CPI (201.6/177.1 =1.14).

**Table III-6  
ISD Equipment and Installation Cost Estimates per Model GDF**

	<b>GDF 1</b>	<b>GDF 2</b>	<b>GDF 3</b>	<b>GDF 4</b>	<b>GDF 5</b>
Tech Rev Oct 2002 (2001 dollars)	\$9,383	\$10,225	\$11,556	\$13,180	\$14,808
Tech Rev Oct 2002 (2006 dollars)	\$10,697	\$11,656	\$13,174	\$15,025	\$16,881
February 2006	\$10,033- \$11,998	\$10,653- \$13,573	\$12,513- \$15,068	\$14,363 - \$17,378	\$16,133 - \$19,678

The cost for annual maintenance, calibration and repair of the ISD system was included in the 2002 analysis, based on the number of ISD components per station as follows:

**Table III-7  
ISD Annual Maintenance, Calibration and Repair Cost Estimates**

ISD Component	Annual maintenance, calibration and repair cost
A/L sensor	\$300
Pressure sensor	\$200
Datalogger	\$50

The calculated cost for each GDF category is provided in Table III-8. There were no changes to these cost estimates for 2006.

**Table III-8  
Estimated ISD Annual Maintenance, Calibration and Repair Costs per Model GDF**

	<b>GDF 1</b>	<b>GDF 2</b>	<b>GDF 3</b>	<b>GDF 4</b>	<b>GDF 5</b>
Tech Rev Oct 2002 (2001 dollars)	\$550	\$700	\$1,150	\$1,600	\$2,050
Tech Rev Oct 2002 (2006 dollars)	\$627	\$798	\$1,311	\$1,824	\$2,337
2006 Estimate	Same	Same	Same	Same	Same

The total upfront costs or capital cost impacts to a station owner are estimated by combining the ISD equipment, installation and first annual testing and calibration costs. The estimates from 2002, corrected to 2006 dollars, are compared to the estimates for 2006 in Table III-9.

**Table III-9  
Estimated ISD Total Upfront Cost per Model GDF**

	<b>GDF 1</b>	<b>GDF 2</b>	<b>GDF 3</b>	<b>GDF 4</b>	<b>GDF 5</b>
Tech Rev Oct 2002 (2006 dollars)	\$11,324	\$12,454	\$14,485	\$16,849	\$19,218
2006 Estimate	\$10,660 - \$12,625	\$11,451 - \$14,371	\$13,824 - \$16,379	\$16,187 - \$19,202	\$18,470 - \$22,015

The ISD cost estimates made in October 2002 are in the range of the 2006 cost estimates. The next section will provide real world costs obtained from the ISD cost survey.

**B. Comparison of 2006 Survey Results to 2002 Cost Estimates**

The cost survey was mailed to 104 ISD facilities and also posted on the vapor recovery webpage. Only six surveys have been returned as of February 2006, and five have sufficient data to include in the cost analysis. A detailed summary of the five returned surveys is provided in Appendix 5, along with a copy of each survey. Individual station information has been removed to maintain confidentiality.

Although the Board directed staff specifically to assess “the capital cost impacts of ISD on smaller-throughput GDFs”, all of the survey responses will be discussed here due to the low survey response rate.

The five stations were all retrofitted with an EVR Phase II system with ISD. The EVR Phase II requirement was triggered by replacement of dispensers, which is a considered a “major modification” and makes an existing facility subject to the vapor recovery requirements of a new facility. The retrofits for these five stations occurred from March 2006 to September 2006.

Table III-10 provides additional general information on the five ISD facilities returning valid surveys.

**Table III-10  
General Information on ISD Facilities from Cost Survey**

GDF Survey ID	A	B	C	D	E
GDF Size Category	2	3	4	5	5
Throughput Range, gal/year	0.3 – 0.6 million	0.6 – 1.2 million	1.2 -1.8 million	> 2.4 million	> 2.4 million
Number of Actual Dispensers	4	2	4	6	12
Number of Assumed Dispensers in 2002	1.5	3	4.5	6	6

The equipment and installation costs from the survey are provided in Table III-11. The equipment cost was corrected in one case, where the costs showed 4 items purchased where only one is required. Also, staff corrected the total number of contractor installation hours where an error was discovered on the survey. These adjustments are explained further in Appendix 5.

**Table III-11  
Comparison of ISD Equipment and Installation Cost to 2002 Estimates**

GDF Survey ID	A	B	C	D	E
Survey ISD Equipment Costs	\$10,636	\$6,238	\$8,450	\$7,000	See total
Survey ISD Installation Costs	\$2,100	\$3,770	\$10,174	\$6,300	See total
<b>TOTAL 2006 Survey Equipment &amp; Installation Costs</b>	\$12,736	\$10,008	\$18,624	\$13,300	\$26,560
<b>TOTAL 2002 Equipment &amp; Installation Cost Estimate (2006 dollars)</b>	\$11,656	\$13,174	\$15,025	\$16,881	\$16,881
<b>Difference Between 2006 Survey Cost and 2002 Estimate</b>	+ \$1,080	- \$3,166	+ \$3,599	- \$3,581	+ \$9,679
<b>Percent Difference from 2002 Estimates</b>	+ 9.3 %	- 24 %	+ 24 %	- 21 %	+ 57 %

Table III-11 shows that 3 of the survey sites incurred higher equipment and installation costs that estimated in 2002. The largest difference occurred for the station with 12 dispensers and can be partially explained as the 2002 estimates assumed that the largest station category had six dispensers.

The 2006 cost survey requested information on permitting costs, although permit costs were not included in the 2002 cost analysis. Staff agrees that permit costs associated with ISD system modifications should be included in calculation of upfront ISD costs. As all stations were retrofitted with a Healy EVR Phase II system at the same time ISD was installed, staff has assumed that 30% of the air district permit cost represents the ISD portion for the SJVAPCD and BAAQMD. In the case of the 3 sites in the SCAQMD, the permit modification fee is a flat rate, so there is no incremental permit cost for ISD. In some cases, such as when UST replacement was part of the station modifications, staff pro-rated the CUPA permit cost as well. Details on the permit cost adjustments are provided in Appendix 5. The final ISD permit costs for each survey station are listed in Table III-12.

**Table III-12  
Permit Costs Attributed to ISD Installation to Include in 2006 Survey Costs**

GDF Survey ID	A	B	C	D	E
Air Pollution Control District	SJVAPCD	BAAQMD	SCAQMD	SCAQMD	SCAQMD
Retrofit: Air District P/O Modification	\$60	\$82	\$0	\$0	\$0
CUPA Permit Costs	\$120	\$400	\$607	No data provided	No data provided
Other permit/inspection costs	\$180	\$564	\$2,011	\$135	No data provided
<b>Total Permit Costs</b>	<b>\$360</b>	<b>\$1,045</b>	<b>\$2,618</b>	<b>\$135</b>	<b>\$0</b>

Data for the final cost category, testing and maintenance, is provided in Table III-13. In reality, these data represent testing conducted at installation, as the systems have not been in service long enough to require maintenance.

**Table III-13  
Comparison of ISD Testing and Maintenance Costs to 2002 Estimates**

GDF Survey ID	A	B	C	D	E
2006 Survey ISD Testing and Maintenance Costs	no info yet (assume \$500)	\$500	No data provided (assume \$500)	\$500	\$500
Tech Rev Oct 2002 (2006 dollars)	\$798	\$1,311	\$1,824	\$2,337	\$2,337

The total upfront costs of ISD based on the 2006 survey are compared to the 2002 estimates in Table III-14. The maximum difference from the 2002

estimates was a GDF5 site that paid 41% more or \$7,842 above the 2002 estimate. Again, the major reason for this difference is the cost of 12 dispenser sensors, versus the six dispensers assumed for GDF5.

Recall that stations with throughputs less than 600,000 gallons per year (GDF1 and GDF2) are currently exempt from ISD requirements. The GDF2 station from the survey installed ISD voluntarily, perhaps in anticipation of higher throughputs in future years. If we consider the GDF2 and GDF3 survey results to represent the “smaller throughput GDFs”, the average ISD upfront costs are 5% lower than the 2002 estimates.

**Table III-14  
Comparison of 2006 Survey ISD Total Upfront Cost to 2002 Estimates**

GDF Survey ID	A	B	C	D	E
GDF Category	GDF2	GDF3	GDF4	GDF5	GDF5
<b>TOTAL 2006 SURVEY</b> Permit, Equip., Install, Testing Costs	\$13,596	\$11,553	\$21,742	\$13,935	\$27,060
<b>TOTAL 2002</b> Equipment, Installation & Testing Cost Estimate	\$12,454	\$14,485	\$16,849	\$19,218	\$19,218
<b>Difference</b> Between 2006 Survey Cost and 2002 Estimate	+ 1,142	- \$2,932	+ \$4,893	- \$5,283	+ \$7,842
<b>Percent Difference</b> from 2002 Estimates	+ 9.2 %	- 20 %	+ 29 %	- 27 %	+ 41 %
<b>Ave: - 5 %</b>					

## V. SUMMARY & RECOMMENDATIONS

This report demonstrates that real-world ISD upfront costs to low gasoline throughput station owners are close to 2002 ISD cost estimates by ARB staff. Staff used 2006 cost inputs based on manufacturer list prices and contractor bid information to demonstrate that the 2002 cost estimates are in the range of actual 2006 costs. The 2002 estimates, which include equipment, installation and testing; predict ISD total upfront costs in the range of \$11,000 to \$19,000 per station. The 2006 calculations using the same methodology show ISD total costs ranging from \$11,000 to \$22,000 depending on station size.

The ISD cost survey results further confirm the validity of the cost methodology, and include permit costs as well. If we consider the GDF2 and GDF3 survey results to represent the “smaller throughput GDFs”, the average ISD upfront costs are 5% lower than the 2002 estimates.

This report fulfills the Board directive in Resolution 02-35 to “assess, following the initial certification of the first EVR Phase II system with in-station diagnostics (ISD), the capital cost impacts of ISD on smaller throughput GDFs” within 18 months after the initial certification of an ISD equipped system. Staff recommends maintaining the existing ISD system requirements.

**APPENDIX 1**

**ARB BOARD RESOLUTION 02-35, DECEMBER 2002**

State of California  
AIR RESOURCES BOARD

Resolution 02-35

December 12, 2002

Agenda Item No.: 02-9-6

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the Air Resources Board (the Board) to adopt standards, rules and regulations and to do such acts as may be necessary for the proper execution of the powers and duties granted to and imposed upon the Board by law;

WHEREAS, section 39607(d) of the Health and Safety Code requires the Board to adopt test procedures to measure compliance with its nonvehicular, or stationary source, emission standards and those of the air pollution control and air quality management districts (districts);

WHEREAS, sections 41950 and 41954 of the Health and Safety Code require the installation of vapor recovery systems for gasoline vapor control during gasoline marketing operations;

WHEREAS, section 41954 of the Health and Safety Code requires the Board to adopt procedures for determining the compliance of any system designed for the control of gasoline vapor emissions during gasoline marketing operations with performance standards established by the Board;

WHEREAS, in the Board's approval of the enhanced vapor recovery (EVR) regulations on March 23, 2000, the Board directed that the Board's staff conduct a technology review for EVR in 2002 to determine whether vapor recovery system designs are able to meet new performance standards and specifications;

WHEREAS, the Board's staff developed new test procedures to evaluate new vapor recovery designs to comply with new performance specifications of the EVR regulations;

WHEREAS, the Board's staff has identified improvements for ten existing vapor recovery certification and test procedures: D-200, CP-201, TP-201.1, TP-201.1B, TP-201.1C, TP-201.1D, TP-201.2, TP-201.2B, TP-201.2D, and TP-201.2F;

WHEREAS, the Board's staff has proposed five new test procedures; TP-201.1E, TP-201.2G, TP-201.2I, TP-201.2J, and TP-201.7;

WHEREAS, the Board's staff has proposed amendments to title 17, California Code of Regulations, sections 94010, 94011, 94163, 94164, and 94165, and the adoption of

sections 94166 and 94167, which incorporate by reference the identified revised, new, and repealed vapor recovery procedures;

WHEREAS, the proposed amendments and adoptions are reasonable and necessary to achieve and maintain ambient air quality standards;

WHEREAS, the California Environmental Quality Act and Board regulations require that no project which may have significant adverse environmental impacts be adopted as originally proposed if feasible alternatives or mitigation measures are available to reduce or eliminate such impacts;

WHEREAS, a public hearing and other administrative proceedings have been held in accordance with the provisions of chapter 3.5 (commencing with section 11340), part 1, division 3, title 2 of the Government Code;

WHEREAS, the Board has considered the preliminary impact of the proposed regulatory action on the economy of the state;

WHEREAS, the Board finds that:

Amendment and adoption of the provisions of title 17, California Code of Regulations, as set forth in Attachment A hereto, and the incorporation of the proposed amended vapor recovery certification and test procedures as set forth in Attachment B hereto, are technologically feasible and are necessary and appropriate to satisfy the requirements of sections 39601, 39607(d), 41950, and 41954 of the Health and Safety Code;

The actions approved herein will have no significant adverse environmental impacts and the regulations are projected to have a positive air quality impact; and

There is no reasonable alternative considered by the Board or otherwise identified that would be more effective in carrying out the purpose for which the regulations are proposed or would be as effective and less burdensome to affected private persons or businesses.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves sections 94010, 94011, 94163, 94164, 94165, 94166, and 94167, title 17, California Code of Regulations, as set forth in Attachment A hereto.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to adopt sections 94010, 94011, 94163, 94164, 94165, 94166, and 94167, title 17, California Code of Regulations, after making the modified regulatory language available for public comment for a period of at least 15 days, as required by Government Code section 11346.8, provided that the Executive Officer shall consider such written comments

regarding the modification as may be submitted during this period, shall make modifications as may be appropriate in light of the comments received or for consistency with the modifications in Attachment B, and shall present the regulations to the Board for further consideration if he determines that this is warranted.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer and Board staff to assess, following the initial certification of the first EVR Phase II system, the adequacy of the lead time to install complying certified EVR Phase II systems prior to the deadlines for complying with on-board refueling vapor recovery (ORVR) requirements. It is the intent of the Board that the assessment determine the adequacy of lead time in order to minimize the necessity that existing gasoline dispensing facilities (service stations or GDFs) will need to upgrade vapor recovery systems or equipment more than once in order to comply with both the EVR Phase II standards and specifications and ORVR. The Executive Officer and Board staff are directed to consult with the Districts, WSPA and other stakeholders in preparing the assessment and to report the findings to the Board within three months of the initial certification of the first EVR Phase II system.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer and Board staff to assess, following the initial certification of the first EVR Phase II system with in-station diagnostics (ISD), the capital cost impacts of ISD on smaller through-put GDFs. The Executive Officer and Board staff are directed to complete the assessment within 18 months after the initial certification of an ISD equipped system.

I hereby certify that the above is a true and correct copy of Resolution 02-35, as adopted by the Air Resources Board.

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Stacey Dorais, Clerk of the Board

Resolution

December 12, 2002

Identification of Attachments to the Resolution

Attachment A: Amendments to sections 94010, 94011, 94163, 94164, 94165, 94166, and 94167, title 17, California Code of Regulations, as noticed on October 25, 2002.

Attachment B: Modifications to Vapor Recovery Certification Procedure CP-201, Definitions D-200, and Test Procedures TP-201.1C, TP-201.1D, TP-201.1E, TP-201.2D, and TP-201.2F, to be made available during the 15-day comment period.

**IN-STATION DIAGNOSTICS FACILITIES IN CALIFORNIA**  
(no data received from shaded districts)

<b>District</b>	<b>VR-202 Installed as of Dec06</b>	<b>VR-202 Permits Pending</b>
Amador	1	0
Antelope	3	0
Bay Area	11	29
Butte	0	1
Calaveras		
Colusa		
El Dorado	5	3
Feather River	0	0
Glenn	0	0
Great Basin		
Imperial	2	0
Kern	4	0
Lake	0	0
Lassen		
Mariposa	0	0
Mendocino	1	1
Modoc		
Mojave	5	0
Monterey	3	3
North Coast	2	1
No. Sierra	3	0
No. Sonoma	0	0
Placer	6	10
Sacramento	4	3
San Diego	16	1
San Joaquin	10	10
SLO	1	1
San. Barb.	1	5
Shasta		
Siskiyou	0	0
South Coast	45	95
Tehama	0	0
Tuolumne	0	0
Ventura	2	4
Yolo-Solano	2	3
<b>TOTALS</b>	<b>127</b>	<b>170</b>

**March 24, 2006**

**PLAN FOR IN-STATION DIAGNOSTICS (ISD)  
COST-EFFECTIVENESS REVIEW**

**OBJECTIVE:** Review the ISD cost-effectiveness as directed in ARB Resolution 02-35 dated December 12, 2002:

*BE IT FURTHER RESOLVED that the Board directs the Executive Officer and Board staff to assess, following the initial certification of the first EVR Phase II system with in-station diagnostics (ISD), the capital cost impacts of ISD on smaller through-put GDFs. The Executive Officer and Board staff are directed to complete the assessment within 18 months after the initial certification of an ISD equipped system.*

**PLAN:** Work with local air districts and gasoline marketers to identify gasoline dispensing facilities (GDF) installing ISD. Collect ISD cost data (equipment, installation, testing and maintenance costs) from the station operators and update the EVR cost analysis to recalculate ISD cost-effectiveness for throughput categories GDF 1, GDF 2 and GDF 3. The ISD cost-effectiveness is the annual ISD costs divided by the annual emission reductions attributed to ISD. The ISD cost-effectiveness for each GDF category as calculated in 2002 is as follows:

	<b>GDF 1</b>	<b>GDF 2</b>	<b>GDF 3</b>	<b>GDF 4</b>	<b>GDF 5</b>
Throughput Range (gallons/month)	< 25,001	25,001 - 50,000	50,001 - 100,000	100,001 - 200,000	> 200,000
ISD Annual costs/ Annual Emission Reductions (\$/lb)	(no ISD)	(no ISD)	\$7.04	\$4.11	\$2.29

The ISD emission reductions will also be reviewed and revised as needed. Data on in-use performance of EVR Phase II systems will be collected in parallel with the ISD in-use evaluation study. Details on the methodology for the ISD cost-effectiveness calculations are described in the staff reports for the March 2000 EVR and December EVR Technology Review rulemakings available via the internet at <http://www.arb.ca.gov/vapor/regulatory.htm>.

**SCHEDULE:** Tasks to be completed by ARB staff by dates below:

April 2006	Identify minimum of twenty facilities with ISD installed or to be installed by June 2006 in at least six districts.
May 2006	Mail-out survey to station owners/gasoline marketers requesting ISD cost data (equipment, installation, testing, and other costs).
June 2006	Draft plan for data collection to assess ISD emission reductions for EVR Phase II systems.
July 2006	Follow-up with station owners as needed regarding missing or questionable data. Prepare and provide status report on data collection and preliminary cost estimates to CAPCOA Vapor Recovery Committee chair. Begin data collection for ISD emission estimates.
September 2006	Progress report at ISD informational meeting.
October 2006	Draft ISD cost-effectiveness calculations available for CAPCOA Vapor Recovery Committee review.
November 2006	Draft ISD cost-effectiveness calculations and assessment report available for air district and industry review.
January 2007	Finalize ISD cost-effectiveness calculations and assessment report with input from air districts and industry. If warranted, recommend modifications to ISD regulatory requirements.



Linda S. Adams  
Secretary for  
Environmental Protection

# Air Resources Board

Robert F. Sawyer, Ph.D., Chair  
1001 I Street • P.O. Box 2815  
Sacramento, California 95812 • [www.arb.ca.gov](http://www.arb.ca.gov)



Arnold Schwarzenegger  
Governor

June 28, 2006

Dear Service Station Operator:

The California Air Resources Board (ARB) staff is collecting cost information on in-station diagnostics (ISD) for vapor recovery systems to verify that ISD is cost-effective in reducing gasoline vapor emissions. We are requesting all facility operators with ISD to help us by completing the attached survey so that we might obtain accurate estimates of real-world costs. The results of the study will be used to assess whether the ISD exemption level of 600,000 gallons/yr is appropriate, or should be revised.

Note that any information you provide will be treated as confidential data. Our plan is to report the survey data in summary form so that no data specific to any individual facility or company will be published. Station operators may wish to delegate completion of the survey to the contractor(s) who performed the ISD installation, or other contractors or vendors who have the detailed ISD cost information for their facility.

For your information, ARB staff is conducting a separate study to evaluate in-use performance of ISD systems. The ISD In-Use Evaluation Protocol is available on our vapor recovery webpage at [www.arb.ca.gov/vapor/vapor.htm](http://www.arb.ca.gov/vapor/vapor.htm). Please contact Alex Santos at [asantos@arb.ca.gov](mailto:asantos@arb.ca.gov) or (916) 324-1003 if you would like more information on the ISD in-use evaluation project.

The project plan and schedule for this cost-effectiveness review is enclosed. We would appreciate return of the survey within a month of receipt of this letter (or by no later than August 25, 2006) in the envelope provided or via fax at (916) 322-2444. Please contact Cindy Castronovo at [ccastron@arb.ca.gov](mailto:ccastron@arb.ca.gov) or (916) 322-8957 if you would have questions or comments on this survey or the ISD cost-effectiveness review process.

Thank you in advance for your help!

Sincerely,

George Lew, Chief  
Engineering and Certification Branch  
Monitoring and Laboratory Division

Enclosures

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: <http://www.arb.ca.gov>.*

California Environmental Protection Agency

### In-Station Diagnostics Cost Survey

ARB Staff Contact: Cindy Castronovo, ccastron@arb.ca.gov, (916) 322-8957

Facility Name:

Address:

City:

Air Pollution District:

Air Permit Number:

Facility Contact:

Facility Phone:

Person completing Survey:

Phone for Survey contact:

Email for Survey contact:

Gasoline Throughput (check one):

< 300,000 gal/year

300,001 to 600,000 gal/year

600,001 to 1,200,000 gal/year

1,200,001 to 1,800,000 gal/year

1,800,001 to 2,400,000 gal/year

> 2,400,000 gal/year

Number of gasoline dispensers:  (note: each dispenser normally has 2 fueling points)

Number of gasoline storage tanks:

ISD was installed as part of a (check one)

new facility installation

retrofit or major modification

If retrofit, was an existing TLS350 upgraded as part of the ISD install?

Yes  No  Don't Know

If retrofit of existing facility, please describe below scope of facility modifications:  
(ie., UST replacement, dispenser replacement, Phase II system change, etc.)

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### Permitting Costs

Air District:

New Facility: Cost for Air District Permit to Construct:

Existing Facility: Cost for Air District Permit Modification:

CUPA:

Other permits or inspection costs (please list below):

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**Total Permit Costs:**

### Financing Costs

Please explain below any financing costs associated with ISD installation:

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### Use of Veeder-Root TLS-350

Please circle "yes" or "no" to the questions below:

- YES      NO      Would you have purchased a TLS-350 with probes if ISD was not required?
- YES      NO      Do you use the TLS-350 for checking fuel levels or delivery reports?
- YES      NO      Do you use the TLS-350 for PLLD or tank leak detection?
- YES      NO      Do you use the TLS-350 for sump, brine or vacuum sensor monitoring?
- YES      NO      Do you use the FMS alarm monitoring service provided by Veeder-Root? If yes, what is the cost? \_\_\_\_\_
- YES      NO      Did you incur costs associated with training employees on use of the TLS-350? If yes, what was the cost? \_\_\_\_\_

Any additional comments? \_\_\_\_\_

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## In-Station Diagnostics Equipment Costs For NEW INSTALLATIONS

(see next page for retrofit costs for sites that had TLS-350 prior to ISD)

Note: include costs for ISD only - Do not include vapor recovery system equipment

		Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
Base TLS-350		TLS-350 Plus*	8470ss-xxx 8482xx-xxx		\$2,655		
		Probe Interface Card	329356-xxx		\$445		
		Tank Inventory Sensor(s)	846xxx-xxx, 847xxx-xxx,		\$1,095		
ISD Add-Ons		Vapor Pressure Sensor	331946-001		\$900		
		Vapor Flow Meter	331847-xxx		\$900		
		ISD Software SEM	330160-xxx		\$2,195		
		Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx		\$795		
		Smart Sensor Interface Card	329356-xxx		\$680		
		NVMEM2	331943-xxx		\$395		
		RS-232 Card	330148-xxx, 329362-xxx, 330586-xxx		\$385		
Other (describe)							
<b>TOTAL:</b>							

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.  
(The TLS-350R is not required for ISD and the cost difference will not be counted.)

## In-Station Diagnostics Equipment Costs For Retrofit of EXISTING STATIONS with TLS-350

(see previous page for new station installations or existing sites without a TLS-350)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
<b>TLS-350 Upgrade</b>	ECPUII (motherboard) & Software Upgrade	331500-xxx		\$580		
<b>TLS-350 ISD Add-Ons</b>	ISD Software SEM	330160-xxx		\$2,195		
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx		\$795		
	Smart Sensor Interface Card	329356-xxx		\$680		
	NVMEM2	331943-xxx		\$395		
	RS-232 Card	330146-xxx, 329362-xxx, 330586-xxx		\$385		
<b>ISD Sensor</b>	Vapor Pressure Sensor	331946-001		\$900		
	Vapor Flow Meter	331847-xxx		\$900		
Other (describe)						
<b>TOTAL:</b> <span style="border: 1px solid black; display: inline-block; width: 100px; height: 20px; vertical-align: middle;"></span>						

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.  
(The TLS-350R is not required for ISD and the cost difference will not be counted.)

## In-Station Diagnostics Installation Costs

Note: Please estimate costs of installing ISD components. One methodology is provided below, but other calculation methods are acceptable. Please remember to separate ISD installation costs from costs due to installation of Healy vapor recovery system components. (Healy vapor recovery components include the VP1000 vacuum assist pump and the Clean Air Separator)

Month of Installation: \_\_\_\_\_ 2006

### FOR ALL FACILITIES:

#### Sensor Installation

Time to install each flowmeter per dispenser:  hours

Time to install pressure sensor (one per site):  hours

### FOR NEW FACILITIES & EXISTING FACILITIES WITHOUT TLS-350:

New TLS-350 EVR/ISD Installation, Programming & Checklist:  hours  
(TLS-350 programming for non-ISD reasons should not be included)

### FOR EXISTING FACILITIES WITH UPGRADABLE TLS-350:

Upgrade TLS-350 with ISD software & checklist:  hours

Other ISD installation costs (please describe below):

\_\_\_\_\_  hours  
\_\_\_\_\_  hours

**TOTAL INSTALLATION HOURS:**  hours

Hourly Labor Cost:  \$/hour

**TOTAL INSTALLATION COST:** \$ \_\_\_\_\_

### Optional Information:

Contractor Installing ISD system: \_\_\_\_\_

Veeder-Root Authorized Service Contractor ID: \_\_\_\_\_

Contractor contact info (email and/or phone): \_\_\_\_\_

### In-Station Diagnostics Testing & Maintenance Costs

ISD requirements include an annual Operability Test. This test is first done at ISD installation (included in the installation costs) and then repeated annually as per Executive Order VR-202-A. More frequent ISD system testing may be required by districts.

If you have conducted ISD related testing or ISD maintenance (not vapor recovery system maintenance) after ISD installation, please note costs below. These costs should include equipment and labor costs.

Vapor recovery system repairs made as a result of ISD detected failures should not be included.

Description of Test or Maintenance	Date	Cost	Comment

## SUMMARY OF VALID ISD COST SURVEY RESULTS

### General Information

Survey ID	A	B	C	D	E
GDF Category	2	3	4	5	5
Throughput Range, gal/year	0.3 - 0.6 million	0.6 - 1.2 million	1.2 - 1.8 million	> 2.4 million	> 2.4 million
Number of Dispensers	4	2	4	6	12
Number of Gasoline USTs	3	2	3	3	3
New Install or Retrofit?	retrofit	retrofit	retrofit	retrofit	retrofit
If Retrofit, was TLS-350 upgraded?	?	yes	yes	N/A	yes
If Retrofit, Scope of Facility Modifications	?	UST & Dispenser replacement	Dispenser replacement	EVR Phase I & II, Dispenser replacement	Dispenser Replacement
Month of ISD Installation	Sept. 2006	March, 2006	April, 2006	July, 2006	July, 2006
Air Pollution Control District	SJVAPCD	BAAQMD	SCAQMD	SCAQMD	SCAQMD

### Use of Veeder-Root TLS-350

Purchase TLS if ISD not required?	yes	yes	no	yes	yes
TLS used for fuel inventory?	yes	yes	yes	yes	yes
TLS used for tank leak detection?	yes	yes	yes	yes	yes
TLS used for sump, brine or vacuum monitor?	yes	yes	yes	yes	yes
FMS monitoring used? Cost?	no	no	no	yes	no
TLS training costs?	no	\$220		no	no

### Permitting Costs

New Facility: Air District A/C	N/A	N/A	N/A	N/A	N/A
Retrofit: Air District P/O Modification	\$60	\$82	\$0	\$0	\$0
CUPA Permit Costs	\$120	\$400	\$607		
Other permit/inspection costs	\$180	\$564	\$2,011	\$135	
Total Permit Costs	\$360	\$1,045	\$2,618	\$135	\$0

### ISD Equipment & Installation Cost

ISD Equipment Costs	\$10,636	\$6,238	\$8,450	\$7,000	
ISD Installation Costs	\$2,100	\$3,770	\$10,174	\$6,300	
TOTAL Equip. & Installation Costs	\$12,736	\$10,008	\$18,624	\$13,300	\$26,560
ISD Testing and Maintenance Costs	no info yet	\$500	no info	\$500	\$500
<b>TOTAL Permit, Equip., Install, Testing Costs</b>	<b>\$13,096</b>	<b>\$11,774</b>	<b>\$21,242</b>	<b>\$13,935</b>	<b>\$27,060</b>

**Adjustments to Survey Results:**

Station A	Assume ISD portion of CUPA permit is 20% and ISD portion of other permits is 10%.
	Survey incorrectly added contractor installation hours to be 110. Corrected to 30 hours. $30 \times \$70/\text{hr} = \$2100$ installation cost.
Station B	Assume ISD portion of air district permit was 30% or \$82. Assume ISD portion of CUPA permit is 20% and ISD portion of other permits is 10%.
Station C	SCAQMD charges a flat fee to modify a permit. Since all the stations installed a Healy EVR Phase II system, there was no incremental cost for ISD.
	Contractor purchased 4 pressure monitors when only one was needed. ISD equipment total reduced from \$10,880 to \$8,450
Station D	SCAQMD charges a flat fee to modify a permit. Since all the stations installed a Healy EVR Phase II system, there was no incremental cost for ISD.
Station E	SCAQMD charges a flat fee to modify a permit. Since all the stations installed a Healy EVR Phase II system, there was no incremental cost for ISD.

### In-Station Diagnostics Cost Survey

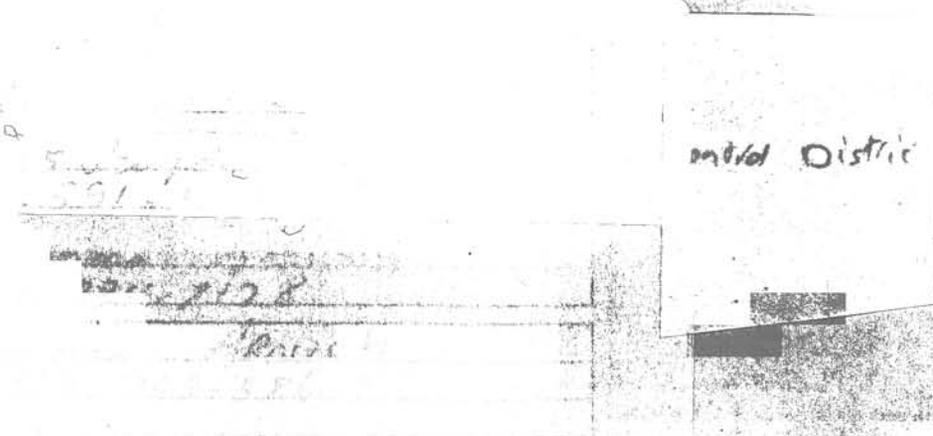
ARB Staff Contact: Cindy Castronovo, ccastron@arb.ca.gov, (916) 322-8957

Facility Name:  
Address:  
City:

Air Pollution District:  
Air Permit Number:

Facility Contact:  
Facility Phone:

Person completing Survey:  
Phone for Survey contact  
Email for Survey contact:



Gasoline Throughput (check one):

< 300,000 gal/year	<input type="checkbox"/>
300,001 to 600,000 gal/year	<input checked="" type="checkbox"/>
600,001 to 1,200,000 gal/year	<input type="checkbox"/>
1,200,001 to 1,800,000 gal/year	<input type="checkbox"/>
1,800,001 to 2,400,000 gal/year	<input type="checkbox"/>
> 2,400,000 gal/year	<input type="checkbox"/>

Number of gasoline dispensers:  (note: each dispenser normally has 2 fueling points)

Number of gasoline storage tanks:

ISD was installed as part of a (check one)

new facility installation   
retrofit or major modification

If retrofit, was an existing TLS350 upgraded as part of the ISD install?

Yes  No  Don't Know

If retrofit of existing facility, please describe below scope of facility modifications:  
(ie., UST replacement, dispenser replacement, Phase II system change, etc.)

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### Permitting Costs

Air District:

New Facility: Cost for Air District Permit to Construct:

Existing Facility: Cost for Air District Permit Modification:

CUPA:

Other permits or inspection costs (please list below):

~~Tulare County Building Department Permit~~  
~~Cost: \$1800.00~~

~~Tulare County Environmental Health Permit \$600.00~~

	> 300,000 dollars
	200,000 to 300,000 dollars
	100,000 to 200,000 dollars
	50,000 to 100,000 dollars
	25,000 to 50,000 dollars
	< 25,000 dollars
	<b>Total Permit Costs:</b> <input type="text" value="2460.00"/>

### Financing Costs

Please explain below any financing costs associated with ISD installation:

ISD was installed as part of a (check one)

new facility installation

modification to existing facility

ISD was an existing TL250 upgraded as part of the ISD installation

Yes  No  Don't Know

If a list of existing facility, please describe below scope of facility modification (ie, first replacement, dispenser replacement, Phase II system change, etc)

### Use of Veeder-Root TLS-350

Please circle "yes" or "no" to the questions below:

- YES     NO    Would you have purchased a TLS-350 with probes if ISD was not required?
- YES     NO    Do you use the TLS-350 for checking fuel levels or delivery reports?
- YES     NO    Do you use the TLS-350 for PLLD or tank leak detection?
- YES     NO    Do you use the TLS-350 for sump, brine or vacuum sensor monitoring?
- YES     NO    Do you use the FMS alarm monitoring service provided by Veeder-Root? If yes, what is the cost? \_\_\_\_\_
- YES     NO    Did you incur costs associated with training employees on use of the TLS-350? If yes, what was the cost? \_\_\_\_\_

Any additional comments? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## In-Station Diagnostics Equipment Costs For NEW INSTALLATIONS

(see next page for retrofit costs for sites that had TLS-350 prior to ISD)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
Base TLS-350	TLS-350 Plus*	8470ss-xxx 8482xx-xxx		\$2,655		
	Probe Interface Card	329356-xxx		\$445		
	Tank Inventory Sensor(s)	846xxx-xxx, 847xxx-xxx		\$1,095		
ISD Add-Ons	Vapor Pressure Sensor	331946-001	1	\$900	936.00	936.00
	Vapor Flow Meter	331847-xxx	1	\$900	936.00	936.00
	ISD Software SEM	330160-xxx	1	\$2,195	2282.80	2282.80
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx	1	\$795	675.00	675.00
	Smart Sensor Interface Card	329356-xxx	1	\$680	681.20	681.20
	NVMEM2	331943-xxx	1	\$395	410.80	410.80
	RS-232 Card	330148-xxx, 329362-xxx, 330586-xxx	1	\$385	332.80	332.80
Other (describe)						

TOTAL: 6254.60

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.  
(The TLS-350R is not required for ISD and the cost difference will not be counted.)

## In-Station Diagnostics Equipment Costs For Retrofit of EXISTING STATIONS with TLS-350

(see previous page for new station installations or existing sites without a TLS-350)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
TLS-350 Upgrade	ECPUII (motherboard) & Software Upgrade	331500-xxx		\$580		
TLS-350 ISD Add-Ons	ISD Software SEM	330160-xxx	1	\$2,195	2282.80	2282.80
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx	1	\$795	675.00	675.00
	Smart Sensor Interface Card	329356-xxx	1	\$680	681.00	681.00
	NVMEM2	331943-xxx	1	\$395	410.80	410.80
	RS-232 Card	330146-xxx, 329362-xxx, 330586-xxx	1	\$385	332.80	332.80
ISD Sensors	Vapor Pressure Sensor	331946-001		\$900	/	
	Vapor Flow Meter	331847-xxx		\$900	/	
Other (describe)						
<b>TOTAL:</b>						<b>4782.40</b>

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.

(The TLS-350R is not required for ISD and the cost difference will not be counted.)





### In-Station Diagnostics Cost Survey

ARB Staff Contact: Cindy Castronovo, ccastron@arb.ca.gov. (916) 322-8957

Facility Name: 20000000000000000000  
 Address: 3968  
 City: Elmer, CA  
 Air Pollution District: 001  
 Air Permit Number: 00000000000000000000  
 Facility Contact: 00000000000000000000  
 Facility Phone: 00000000000000000000  
 Person completing Survey: 00000000000000000000  
 Phone for Survey contact: 00000000000000000000  
 Email for Survey contact: 00000000000000000000

Gasoline Throughput (check one):

< 300,000 gal/year	<input type="checkbox"/>
300,001 to 600,000 gal/year	<input type="checkbox"/>
600,001 to 1,200,000 gal/year	<input checked="" type="checkbox"/>
1,200,001 to 1,800,000 gal/year	<input type="checkbox"/>
1,800,001 to 2,400,000 gal/year	<input type="checkbox"/>
> 2,400,000 gal/year	<input type="checkbox"/>

Number of gasoline dispensers:  (note: each dispenser normally has 2 fueling points)

Number of gasoline storage tanks:

ISD was installed as part of a (check one)

new facility installation   
 retrofit or major modification

If retrofit, was an existing TLS350 upgraded as part of the ISD install?

Yes  No  Don't Know

If retrofit of existing facility, please describe below scope of facility modifications: (ie., UST replacement, dispenser replacement, Phase II system change, etc.)

UST REPLACEMENT & DISPENSER REPLACEMENT

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### Permitting Costs

Air District:

New Facility: Cost for Air District Permit to Construct:

Existing Facility: Cost for Air District Permit Modification:

CUPA:

Other permits or inspection costs (please list below):

<u>CITY OF FREMONT - BLDG DEPT.</u>	<u>2,888.06</u>
<u>PERMITTING CONSULTANT</u>	<u>2,750.00</u>
_____	_____
_____	_____
_____	_____
_____	_____

Total Permit Costs:

### Financing Costs

Please explain below any financing costs associated with ISD installation:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Use of Veeder-Root TLS-350**

Please circle "yes" or "no" to the questions below:

- YES    NO    Would you have purchased a TLS-350 with probes if ISD was not required?
- YES    NO    Do you use the TLS-350 for checking fuel levels or delivery reports?
- YES    NO    Do you use the TLS-350 for PLLD or tank leak detection?
- YES    NO    Do you use the TLS-350 for sump, brine or vacuum sensor monitoring?
- YES     NO    Do you use the FMS alarm monitoring service provided by Veeder-Root? If yes, what is the cost? \_\_\_\_\_
- YES    NO    Did you incur costs associated with training employees on use of the TLS-350? If yes, what was the cost? 290.00 ?

Any additional comments? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## In-Station Diagnostics Equipment Costs For NEW INSTALLATIONS

(see next page for retrofit costs for sites that had TLS-350 prior to ISD)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
Base TLS-350	TLS-350 Plus*	8470ss-xxx 8482xx-xxx		\$2,655		
	Probe Interface Card	329356-xxx		\$445		
	Tank Inventory Sensor(s)	846xxx-xxx, 847xxx-xxx,		\$1,095		
ISD Add-Ons	Vapor Pressure Sensor	331946-001		\$900		
	Vapor Flow Meter	331847-xxx		\$900		
	ISD Software SEM	330180-xxx		\$2,195		
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx		\$795		
	Smart Sensor Interface Card	329356-xxx		\$680		
	NVMEM2	331943-xxx		\$395		
	RS-232 Card	330148-xxx, 329362-xxx, 330586-xxx		\$385		
	Other (describe)					
<b>TOTAL:</b>						

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.  
(The TLS-350R is not required for ISD and the cost difference will not be counted.)

## In-Station Diagnostics Equipment Costs For Retrofit of EXISTING STATIONS with TLS-350

(see previous page for new station installations or existing sites without a TLS-350)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
TLS-350 Upgrade	ECPUII (motherboard) & Software Upgrade	331500-xxx	1	\$580	625.00	625.00
TLS-350 ISD Add-Ons	ISD Software SEM	330160-xxx	1	\$2,195	1,514.55	1,514.55
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx	1	\$795	469.20	469.20
	Smart Sensor Interface Card	329355-xxx	1	\$680	680.00	680.00
	NVMEM2	331913-xxx	1	\$395	272.55	272.55
	RS-232 Card	330140-xxx, 329362-xxx, 330586-xxx	1	\$385	231.15	231.15
ISD Sensor	Vapor Pressure Sensor	331946-001	1	\$900	621.00	621.00
	Vapor Flow Meter	331847-xxx	2	\$900	621.00	1,242.00
Other (describe)		4 OUTPUT RELAY MODULE @TY 1 @				90.94

SUB-TOTAL: 5,736.39

TAX: 501.95

\$6,238.34

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.  
(The TLS-350R is not required for ISD and the cost difference will not be counted.)

### In-Station Diagnostics Installation Costs

Note: Please estimate costs of installing ISD components. One methodology is provided below, but other calculation methods are acceptable. Please remember to separate ISD installation costs from costs due to installation of Healy vapor recovery system components. (Healy vapor recovery components include the VP1000 vacuum assist pump and the Clean Air Separator)

Month of Installation: MARCH 2006

**FOR ALL FACILITIES:**

Sensor Installation

Time to install each flowmeter per dispenser: 2X 

8
8

 hours = 16

Time to install pressure sensor (one per site): 

8
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 hours

**FOR NEW FACILITIES & EXISTING FACILITIES WITHOUT TLS-350:**

New TLS-350 EVR/ISD Installation, Programming & Checklist: 

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 hours  
(TLS-350 programming for non-ISD reasons should not be included)

**FOR EXISTING FACILITIES WITH UPGRADABLE TLS-350:**

Upgrade TLS-350 with ISD software & checklist: 

16
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 hours

Other ISD installation costs (please describe below):

ADDITIONAL PLUMBING

12
----

 hours  
FULL V-R CABLE

6
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 hours

TOTAL INSTALLATION HOURS: 

58
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 hours

Hourly Labor Cost: 

65
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 \$/hour

TOTAL INSTALLATION COST: \$ 3,770

**Optional Information:**

Contractor Installing ISD system: WESTON ENGINEERING  
Veeder-Rool Authorized Service Contractor ID: \_\_\_\_\_  
Contractor contact info (email and/or phone): \_\_\_\_\_





Page 2 - Permitting Costs

Since major work was done at this station (UST replacement and dispenser displacement), I suspect that the GUPA \$2000 and City of Fremont \$2,888.06 fees would have been the same for a site without ISD. If you could tell me the cost of the whole retrofit project, I can pro-rate the ISD portion of the consultant fee.

RESPONSE

TOTAL COST:  
\$340K

Page 3 - Use of Veeder-Root TLS-350

It's difficult for me to read the cost for training employees to use ISD on the fax sheet. Is it \$220 or something else?

\$220

Page 7 - ISD Testing and Maintenance Costs

The \$2,500 cost for "fire-up/testing" seems very high for ISD alone. Could this be the cost associated with all the vapor recovery system and UST tests? Would it be possible to get documentation of the services that were included in this testing?

ISD PORTION  
WOULD BE  
~ \$500

Thank you very much again for your help in compiling this information. I know it is a lot of work on your part!!!

Cindy Castronovo  
CA Air Resources Board  
[ccastron@arb.ca.gov](mailto:ccastron@arb.ca.gov)  
(916) 322-8957

(2)  
Rec'd  
8/18/06

### In-Station Diagnostics Cost Survey

ARB Staff Contact: Cindy Castronovo, ccastron@arb.ca.gov, (916) 322-8957

Facility Name:

Address:

C

Air Pollution District:

Air Permit Number:

Facility Contact:

Facility Phone:

Person completing Survey:

Phone for Survey contact:

Email for Survey contact:

Gasoline Throughput (check one):

< 300,000 gal/year	<input type="checkbox"/>
300,001 to 600,000 gal/year	<input type="checkbox"/>
600,001 to 1,200,000 gal/year	<input type="checkbox"/>
1,200,001 to 1,800,000 gal/year	<input checked="" type="checkbox"/>
1,800,001 to 2,400,000 gal/year	<input type="checkbox"/>
> 2,400,000 gal/year	<input type="checkbox"/>

Number of gasoline dispensers:  (note: each dispenser normally has 2 fueling points)

Number of gasoline storage tanks:

ISD was installed as part of a (check one)

new facility installation

retrofit or major modification

If retrofit, was an existing TLS350 upgraded as part of the ISD install?

Yes

No

Don't Know

If retrofit of existing facility, please describe below scope of facility modifications:  
(i.e., UST replacement, dispenser replacement, Phase II system change, etc.)

DISPENSER REPLACEMENT, ADD (2) NEW DISPENSERS,  
CONVERT TO BLENDED OF MID GRADE FUEL.

**Permitting Costs**

Air District:

New Facility: Cost for Air District Permit to Construct:

Existing Facility: Cost for Air District Permit Modification:

CUPA:

Other permits or inspection costs (please list below):

- 1. - SCAQMD PERMIT = \$ 1,594.74
- 2. - FIRE DEPT. PERMIT = \$ 309.10
- 3. - ELECTRIC PERMIT = \$ 183.69
- 4. - HEALTH DEPT. PERMIT = \$ 607.20
- 5. - BUILDING PLAN CHECK = \$ 1518.00

Total Permit Costs: **4212.73**

**Financing Costs**

Please explain below any financing costs associated with ISD installation:

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### Use of Veeder-Root TLS-350

Please circle "yes" or "no" to the questions below:

- YES       NO      Would you have purchased a TLS-350 with probes if ISD was not required?
- YES      NO      Do you use the TLS-350 for checking fuel levels or delivery reports?
- YES      NO      Do you use the TLS-350 for PLLD or tank leak detection?
- YES      NO      Do you use the TLS-350 for sump, brine or vacuum sensor monitoring?
- YES       NO      Do you use the FMS alarm monitoring service provided by Veeder-Root? If yes, what is the cost? \_\_\_\_\_
- YES      NO      Did you incur costs associated with training employees on use of the TLS-350? If yes, what was the cost? \_\_\_\_\_

Any additional comments? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## In-Station Diagnostics Equipment Costs For Retrofit of EXISTING STATIONS with TLS-350

(see previous page for new station installations or existing sites without a TLS-350)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
TLS-350 Upgrade	ECPUII (motherboard) & Software Upgrade	331500-xxx		\$580		
TLS-350 ISD Add-Ons	ISD Software SEM	330160-xxx	1	\$2,195	1975. <sup>00</sup>	1975. <sup>00</sup>
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx	1	\$795	760. <sup>50</sup>	760. <sup>50</sup>
	Smart Sensor Interface Card	329355-xxx	1	\$680	621. <sup>00</sup>	621. <sup>00</sup>
	NVMEM2	331943-xxx	1	\$395	355. <sup>50</sup>	355. <sup>50</sup>
	RS-232 Card	330145-xxx, 329352-xxx, 330586-xxx	1	\$385	301. <sup>50</sup>	301. <sup>50</sup>
ISD Sensor	Vapor Pressure Sensor	331946-001	4	\$900	810. <sup>00</sup>	3240. <sup>00</sup>
	Vapor Flow Meter	331847-xxx	4	\$900	810. <sup>00</sup>	3240. <sup>00</sup>
Other (describe) <i>Probe Interface</i>			1		387. <sup>00</sup>	387. <sup>00</sup>
<b>TOTAL:</b>						<b>10,820.70</b>

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.  
(The TLS-350R is not required for ISD and the cost difference will not be counted.)

### In-Station Diagnostics Installation Costs

Note: Please estimate costs of installing ISD components. One methodology is provided below, but other calculation methods are acceptable. Please remember to separate ISD installation costs from costs due to installation of Healy vapor recovery system components. (Healy vapor recovery components include the VP1000 vacuum assist pump and the Clean Air Separator)

Month of Installation: April 2006

**FOR ALL FACILITIES:**

Sensor Installation

Time to install each flowmeter per dispenser:  hours  
Time to install pressure sensor (one per site):  hours

**FOR NEW FACILITIES & EXISTING FACILITIES WITHOUT TLS-350:**

New TLS-350 EVR/ISD Installation, Programming & Checklist:  hours  
(TLS-350 programming for non-ISD reasons should not be included)

**FOR EXISTING FACILITIES WITH UPGRADABLE TLS-350:**

Upgrade TLS-350 with ISD software & checklist:  hours

Other ISD installation costs (please describe below):

\_\_\_\_\_  hours  
\_\_\_\_\_  hours

TOTAL INSTALLATION HOURS:  hours  
Hourly Labor Cost:  \$/hour  
TOTAL INSTALLATION COST: \$ \_\_\_\_\_

**Optional Information:**

Contractor installing ISD system: PETCON TECHNOLOGIES, INC  
Veeder-Root Authorized Service Contractor ID: GW MAINTENANCE  
Contractor contact info (email and/or phone): (800) 294-2455

PETCON TECHNOLOGIES = \$ 7860.00  
GW MAINTENANCE = \$ 2,313.76



### In-Station Diagnostics Cost Survey

ARB Staff Contact: Cindy Castronovo, ccastron@arb.ca.gov, (916) 322-8957

Facility Name:

Address:

City:

Air Pollution District:

Air Permit Number:

Facility Contact:

Facility Phone:

Person completing Survey:

Phone for Survey contact:

Email for Survey contact:

Gasoline Throughput (check one):

- < 300,000 gal/year
- 300,001 to 600,000 gal/year
- 600,001 to 1,200,000 gal/year
- 1,200,001 to 1,800,000 gal/year
- 1,800,001 to 2,400,000 gal/year
- > 2,400,000 gal/year

Number of gasoline dispensers:  (note: each dispenser normally has 2 fueling points)

Number of gasoline storage tanks:

ISD was installed as part of a (check one)

- new facility installation
- retrofit or major modification

If retrofit, was an existing TLS350 upgraded as part of the ISD install?

Yes

No

Don't Know

If retrofit of existing facility, please describe below scope of facility modifications:  
(ie., UST replacement, dispenser replacement, Phase II system change, etc.)

EVR Phase I, Phase II and Dispensers replacement

### Permitting Costs

Air District:

New Facility: Cost for Air District Permit to Construct:

Existing Facility: Cost for Air District Permit Modification:

CUPA:

Other permits or inspection costs (please list below):

134.60

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**Total Permit Costs:**

### Financing Costs

Please explain below any financing costs associated with ISD installation:

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### Use of Veeder-Root TLS-350

Please circle "yes" or "no" to the questions below:

YES

NO

Would you have purchased a TLS-350 with probes if ISD was not required?

YES

NO

Do you use the TLS-350 for checking fuel levels or delivery reports?

YES

NO

Do you use the TLS-350 for PLLD or tank leak detection?

YES

NO

Do you use the TLS-350 for sump, brine or vacuum sensor monitoring?

YES

NO

Do you use the FMS alarm monitoring service provided by Veeder-Root? If yes, what is the cost? \_\_\_\_\_

YES

NO

Did you incur costs associated with training employees on use of the TLS-350? If yes, what was the cost? \_\_\_\_\_

Any additional comments? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## In-Station Diagnostics Equipment Costs For NEW INSTALLATIONS

(see next page for retrofit costs for sites that had TLS-350 prior to ISD)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
Base TLS-350	TLS-350 Plus*	8470ss-xxx 8482xx-xxx		\$2,655		
	Probe Interface Card	329356-xxx		\$445		
	Tank Inventory Sensor(s)	846xxx-xxx, 847xxx-xxx,		\$1,095		
ISD Add-Ons	Vapor Pressure Sensor	331946-001		\$900		
	Vapor Flow Meter	331847-xxx		\$900		
	ISD Software SEM	330160-xxx		\$2,195		
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx		\$795		
	Smart Sensor Interface Card	329356-xxx		\$680		
	NVMEM2	331943-xxx		\$395		
	RS-232-Card	330148-xxx, 329362-xxx, 330586-xxx		\$385		
Other (describe)						
TOTAL:						

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.

(The TLS-350R is not required for ISD and the cost difference will not be counted.)

*Total cost for ISD equipment was \$7,000 according to 1/29/07 phone call.*

## In-Station Diagnostics Equipment Costs For Retrofit of EXISTING STATIONS with TLS-350

(see previous page for new station installations or existing sites without a TLS-350)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
TLS-350 Upgrade	ECPUII (motherboard) & Software Upgrade	331500-xxx		\$580		
TLS-350 ISD Add-Ons	ISD Software SEM	330160-xxx		\$2,195		
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx		\$795		
	Smart Sensor Interface Card	329356-xxx		\$680		
	NVMEM2	331943-xxx		\$395		
	RS-232 Card	330148-xxx, 329362-xxx, 330586-xxx		\$385		
ISD Sensors	Vapor Pressure Sensor	331946-001		\$900		
	Vapor Flow Meter	331847-xxx		\$900		
Other (describe)						
TOTAL: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 20px; vertical-align: middle;"></span>						

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.  
(The TLS-350R is not required for ISD and the cost difference will not be counted.)

### In-Station Diagnostics Installation Costs

Note: Please estimate costs of installing ISD components. One methodology is provided below, but other calculation methods are acceptable. Please remember to separate ISD installation costs from costs due to installation of Healy vapor recovery system components. (Healy vapor recovery components include the VP1000 vacuum assist pump and the Clean Air Separator)

Month of Installation: July 2006

**FOR ALL FACILITIES:**

Sensor Installation

Time to install each flowmeter per dispenser:

90 hours

Time to install pressure sensor (one per site):

90 hours

**FOR NEW FACILITIES & EXISTING FACILITIES WITHOUT TLS-350:**

New TLS-350 EVR/ISD Installation, Programming & Checklist:

90 hours

(TLS-350 programming for non-ISD reasons should not be included)

**FOR EXISTING FACILITIES WITH UPGRADABLE TLS-350:**

Upgrade TLS-350 with ISD software & checklist:

90 hours

Other ISD installation costs (please describe below):

\_\_\_\_\_  
\_\_\_\_\_

90 hours  
90 hours

TOTAL INSTALLATION HOURS:

90 hours

Hourly Labor Cost:

70 \$/hour

TOTAL INSTALLATION COST: \$

6,300

*one 4/29/07*

**Optional Information:**

Contractor Installing ISD system:

Veeder-Root Authorized Service Contractor ID:

Contractor contact info (email and/or phone):

### In-Station Diagnostics Testing & Maintenance Costs

ISD requirements include an annual Operability Test. This test is first done at ISD installation (included in the installation costs) and then repeated annually as per Executive Order VR-202-A. More frequent ISD system testing may be required by districts.

If you have conducted ISD related testing or ISD maintenance (not vapor recovery system maintenance) after ISD installation, please note costs below. These costs should include equipment and labor costs.

Vapor recovery system repairs made as a result of ISD detected failures should not be included.

Description of Test or Maintenance	Date	Cost	Comment
461 Test	August	2000/-	It is Very Expensive
			we have problems
			Every day or 3 days
			in a week.

5

### In-Station Diagnostics Cost Survey

ARB Staff Contact: Cindy Castronovo, ccastron@arb.ca.gov, (916) 322-8957

Facility Name:

Address:

City:

Air Pollution District:

Air Permit Number:

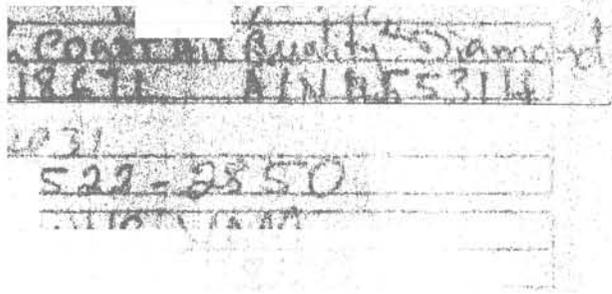
Facility Contact:

Facility Phone:

Person completing Survey:

Phone for Survey contact

Email for Survey contact:



ar.

Gasoline Throughput (check one):

- < 300,000 gal/year
- 300,001 to 600,000 gal/year
- 600,001 to 1,200,000 gal/year
- 1,200,001 to 1,800,000 gal/year
- 1,800,001 to 2,400,000 gal/year
- > 2,400,000 gal/year

Number of gasoline dispensers:  (note: each dispenser normally has 2 fueling points)

Number of gasoline storage tanks:

ISD was installed as part of a (check one)

new facility installation

retrofit or major modification

If retrofit, was an existing TLS350 upgraded as part of the ISD install?

Yes  No  Don't Know

If retrofit of existing facility, please describe below scope of facility modifications: (ie., UST replacement, dispenser replacement, Phase II system change, etc.)

Dispenser Replacement

### Permitting Costs

Air District: TAMCOST

New Facility: Cost for Air District Permit to Construct:

Existing Facility: Cost for Air District Permit Modification:

\$1,450.66

CUPA:

Other permits or inspection costs (please list below):

N/A

<input type="checkbox"/>	< 300,000 dollars
<input type="checkbox"/>	300,000 to 600,000 dollars
<input type="checkbox"/>	600,000 to 1,200,000 dollars
<input type="checkbox"/>	1,200,000 to 1,800,000 dollars
<input type="checkbox"/>	1,800,000 to 2,400,000 dollars
<input checked="" type="checkbox"/>	> 2,400,000 dollars
<b>Total Permit Costs:</b> 1,450.66	

### Financing Costs

Please explain below any financing costs associated with ISD installation:

ISD was installed as part of a (check one)

new facility installation

retrofit or major modification

if it was an existing ISD upgraded as part of the ISD install

Yes  No  Don't Know

retrofit to existing facility, please describe below scope of facility modifications (e.g., best replacement, dispenser replacement, Phase II system change, etc.)

Financial Review

### Use of Veeder-Root TLS-350

Please circle "yes" or "no" to the questions below:

- YES     NO    Would you have purchased a TLS-350 with probes if ISD was not required?
- YES     NO    Do you use the TLS-350 for checking fuel levels or delivery reports?
- YES     NO    Do you use the TLS-350 for PLLD or tank leak detection?
- YES     NO    Do you use the TLS-350 for sump, brine or vacuum sensor monitoring?
- YES     NO    Do you use the FMS alarm monitoring service provided by Veeder-Root? If yes, what is the cost? \_\_\_\_\_
- YES     NO    Did you incur costs associated with training employees on use of the TLS-350? If yes, what was the cost? \_\_\_\_\_

Any additional comments? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

N/A

## In-Station Diagnostics Equipment Costs For NEW INSTALLATIONS

(see next page for retrofit costs for sites that had TLS-350 prior to ISD)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
Base TLS-350	TLS-350 Plus*	8470ss-xxx 8482xx-xxx		\$2,655		
	Probe Interface Card	329356-xxx		\$445		
	Tank Inventory Sensor(s)	846xxx-xxx 847xxx-xxx		\$1,095		
ISD Add-Ons	Vapor Pressure Sensor	331946-001		\$900		
	Vapor Flow Meter	331847-xxx		\$900		
	ISD Software SEM	330160-xxx		\$2,195		
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx		\$795		
	Smart Sensor Interface Card	329356-xxx		\$680		
	NVMEM2	331943-xxx		\$395		
	RS-232 Card	330148-xxx, 329362-xxx, 330586-xxx		\$385		
Other (describe)						

See page (5)

TOTAL:

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.  
(The TLS-350R is not required for ISD and the cost difference will not be counted.)

## In-Station Diagnostics Equipment Costs For Retrofit of EXISTING STATIONS with TLS-350

(see previous page for new station installations or existing sites without a TLS-350)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
TLS-350 Upgrade	ECPUII (motherboard) & Software Upgrade	331500-xxx		\$580		
TLS-350 ISD Add-Ons	ISD Software SEM	330160-xxx		\$2,195		
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx		\$795		
	Smart Sensor Interface Card	329356-xxx		\$680		
	NVMEM2	331943-xxx		\$395		
	RS-232 Card	330145-xxx, 329362-xxx, 330586-xxx		\$385		
ISD Sensor	Vapor Pressure Sensor	331946-001		\$900		
	Vapor Flow Meter	331847-xxx		\$900		

Other (describe) **Price is included all installation ISD**  
 Furnish & install (6) flow meters, Furnish & install (1) vapor pressure sensor  
 Furnish & install new mother board & sins cards for Veeder Root TLS 350  
 Furnish & install new conduit from Veeder Root TOTAL: **26,560.00**  
 TLS350 to each MPD.

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.  
 (The TLS-350R is not required for ISD and the cost difference will not be counted.)

# In-Station Diagnostics Installation Costs

Note: Please estimate costs of installing ISD components. One methodology is provided below, but other calculation methods are acceptable. Please remember to separate ISD installation costs from costs due to installation of Healy vapor recovery system components. (Healy vapor recovery components include the VP1000 vacuum assist pump and the Clean Air Separator)

Month of Installation: 2006

Component	Part No.	Number Installed	List Price	Your Price	Notes
<b>FOR ALL FACILITIES:</b>					
Sensor Installation					
Time to install each flowmeter per dispenser:					hours
Time to install pressure sensor (one per site):					hours
<b>FOR NEW FACILITIES &amp; EXISTING FACILITIES WITHOUT TLS-350:</b>					
New TLS-350 EVR/ISD Installation, Programming & Checklist:			\$2185		hours
(TLS-350 programming for non-ISD reasons should not be included)					
<b>FOR EXISTING FACILITIES WITH UPGRADABLE TLS-350:</b>					
Upgrade TLS-350 with ISD software & checklist:			\$880		hours
Other ISD installation costs (please describe below):			\$882		hours
<b>TOTAL INSTALLATION HOURS:</b>					hours
Hourly Labor Cost:					\$/hour
<b>TOTAL INSTALLATION COST:</b>					\$

**Optional Information:**

Contractor Installing ISD system:  
 Veeder-Root Authorized Service Contractor ID:  
 Contractor contact info (email and/or phone):

*See page (5)*

**In-Station Diagnostics Testing & Maintenance Costs**

ISD requirements include an annual Operability Test. This test is first done at ISD installation (included in the installation costs) and then repeated annually as per Executive Order VR-202-A. More frequent ISD system testing may be required by districts.

If you have conducted ISD related testing or ISD maintenance (not vapor recovery system maintenance) after ISD installation, please note costs below. These costs should include equipment and labor costs.

Vapor recovery system repairs made as a result of ISD detected failures should not be included.

Description of Test or Maintenance	Date	Cost	Comment
Alex ISD installation	07-03-06		
Rube 46 / Vapor Recovery test, Phil-Tite 101B			
Vapor adapter Nitrogen perform ISD/operability testing		\$1,986.00	

1

### In-Station Diagnostics Cost Survey

ARB Staff Contact: Cindy Castronovo, ccastron@arb.ca.gov, (916) 322-8957

Facility Name:

Address:

City:

Air Pollution District:

Air Permit Number:

Facility Contact:

Facility Phone:

Person completing Survey:

Phone for Survey contact:

Email for Survey contact:



Gasoline Throughput (check one):

< 300,000 gal/year	<input type="checkbox"/>
300,001 to 600,000 gal/year	<input type="checkbox"/>
600,001 to 1,200,000 gal/year	<input type="checkbox"/>
1,200,001 to 1,800,000 gal/year	<input type="checkbox"/>
1,800,001 to 2,400,000 gal/year	<input type="checkbox"/>
> 2,400,000 gal/year	<input checked="" type="checkbox"/>

Number of gasoline dispensers:  (note: each dispenser normally has 2 fueling points)

Number of gasoline storage tanks:

ISD was installed as part of a (check one)

new facility installation	<input type="checkbox"/>
retrofit or major modification	<input type="checkbox"/>

If retrofit, was an existing TLS350 upgraded as part of the ISD install?

Yes  No  Don't Know

If retrofit of existing facility, please describe below scope of facility modifications:  
(ie., UST replacement, dispenser replacement, Phase II system change, etc.)

UP TO DATE WORK PHASE II HEAVY SYSTEM.

### Permitting Costs

Air District:

New Facility: Cost for Air District Permit to Construct:

Existing Facility: Cost for Air District Permit Modification:

CUPA:

Other permits or inspection costs (please list below):

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<input type="checkbox"/>	paying 000,000 of 100,000	<b>Total Permit Costs:</b>	<input type="text" value="2,000.00"/>
<input type="checkbox"/>	paying 000,000 of 100,000		
<input type="checkbox"/>	paying 000,000 of 100,000		
<input checked="" type="checkbox"/>	paying 000,000 of 100,000		

### Financing Costs

Please explain below any financing costs associated with ISD installation:

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### Use of Veeder-Root TLS-350

Please circle "yes" or "no" to the questions below:

YES

NO

Would you have purchased a TLS-350 with probes if ISD was not required?

YES

NO

Do you use the TLS-350 for checking fuel levels or delivery reports?

YES

NO

Do you use the TLS-350 for PLLD or tank leak detection?

YES

NO

Do you use the TLS-350 for sump, brine or vacuum sensor monitoring?

YES

NO

Do you use the FMS alarm monitoring service provided by Veeder-Root? If yes, what is the cost? \_\_\_\_\_

YES

NO

Did you incur costs associated with training employees on use of the TLS-350? If yes, what was the cost? \_\_\_\_\_

Any additional comments? PLEASE STOP DOING ALL THIS STUFF, WE JUST FINISHED OUR PHASE II HEAVY WORK COST ME ALMOST \$400,000.00, NO MORE.

## In-Station Diagnostics Equipment Costs For NEW INSTALLATIONS

(see next page for retrofit costs for sites that had TLS-350 prior to ISD)

Note: include costs for ISD only - Do not include vapor recovery system equipment

		Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
Base TLS-350		TLS-350 Plus*	8470ss-xxx 8482xx-xxx		\$2,655		
		Probe Interface Card	329356-xxx		\$445		
		Tank Inventory Sensor(s)	846xxx-xxx, 847xxx-xxx,		\$1,095		
ISD Add-Ons		Vapor Pressure Sensor	331946-001		\$900		
		Vapor Flow Meter	331847-xxx		\$900		
		ISD Software SEM	330160-xxx		\$2,195		
		Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx		\$795		
		Smart Sensor Interface Card	329356-xxx		\$680		
		NVMEM2	331943-xxx		\$395		
		RS-232 Card	330148-xxx, 329362-xxx, 330586-xxx		\$385		
	Other (describe)						
<b>TOTAL:</b>							

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.  
(The TLS-350R is not required for ISD and the cost difference will not be counted.)

## In-Station Diagnostics Equipment Costs For Retrofit of EXISTING STATIONS with TLS-350

(see previous page for new station installations or existing sites without a TLS-350)

Note: include costs for ISD only - Do not include vapor recovery system equipment

	Component	Part No.	Number Installed	Component List Price	Your Component Price	Total for your site (# components x your price)
TLS-350 Upgrade	ECPUII (motherboard) & Software Upgrade	331500-xxx		\$580		
TLS-350 ISD Add-Ons	ISD Software SEM	330160-xxx		\$2,195		
	Dispenser Interface Module (DIM)	330xxx-xxx, 331xxx-xxx		\$795		
	Smart Sensor Interface Card	329356-xxx		\$680		
	NVMEM2	331943-xxx		\$395		
	RS-232 Card	330148-xxx, 329362-xxx, 330586-xxx		\$385		
ISD Sensors	Vapor Pressure Sensor	331946-001		\$900		
	Vapor Flow Meter	331847-xxx		\$900		
Other (describe)						
TOTAL:						

\*If purchased TLS-350R (includes Business Inventory Reconciliation (BIR)), please note and include price.

(The TLS-350R is not required for ISD and the cost difference will not be counted.)

# In-Station Diagnostics Installation Costs

Note: Please estimate costs of installing ISD components. One methodology is provided below, but other calculation methods are acceptable. Please remember to separate ISD installation costs from costs due to installation of Healy vapor recovery system components. (Healy vapor recovery components include the VP1000 vacuum assist pump and the Clean Air Separator)

Month of Installation: AUGUST 2006

**FOR ALL FACILITIES:**

Sensor Installation

Time to install each flowmeter per dispenser:  hours  
 Time to install pressure sensor (one per site):  hours

**FOR NEW FACILITIES & EXISTING FACILITIES WITHOUT TLS-350:**

New TLS-350 EVR/ISD Installation, Programming & Checklist:  hours  
 (TLS-350 programming for non-ISD reasons should not be included)

**FOR EXISTING FACILITIES WITH UPGRADABLE TLS-350:**

Upgrade TLS-350 with ISD software & checklist:  hours

Other ISD installation costs (please describe below):

<input type="text"/>	hours	
<input type="text"/>	hours	
<b>TOTAL INSTALLATION HOURS:</b>	<input type="text"/>	
Hourly Labor Cost:	<input type="text"/>	
<b>TOTAL INSTALLATION COST: \$</b>	<input type="text"/>	

**Optional Information:**

Contractor Installing ISD system:

Veeder-Root Authorized Service Contractor ID:

Contractor contact info (email and/or phone):

### In-Station Diagnostics Testing & Maintenance Costs

ISD requirements include an annual Operability Test. This test is first done at ISD installation (included in the installation costs) and then repeated annually as per Executive Order VR-202-A. More frequent ISD system testing may be required by districts.

If you have conducted ISD related testing or ISD maintenance (not vapor recovery system maintenance) after ISD installation, please note costs below. These costs should include equipment and labor costs.

Vapor recovery system repairs made as a result of ISD detected failures should not be included.

Description of Test or Maintenance	Date	Cost	Comment
IT'S A NEW CONSTRUCTION			I HAVE NO IDEA HOW MUCH
EACH SINGLE THING COSTS			CONTRACTOR IS IN LOSS.